NEW FROM CONTROL MICROSYSTEMS
FlowStation

The Evolution of Pump Station Control
FlowStation 110 is a progressive, integrated solution from Control Microsystems. This complete pump station controller is ideal for use in storm and waste water lift stations and common pump-up applications. Whether you are an end-user, integrator, or pump panel manufacturer, the FlowStation 110 increases the value and reduces the cost of your pumping system.

- Complete out-of-the-box pump station controller package
- Effortless installation and configuration with built-in web server
- Convenient monitoring with BlackBerry interface
- Instant event logging and alarm reporting via SMS messaging and email
- Flexible and adaptable with custom functionality
- Enhanced Integration with ClearSCADA host software

Complete Pump Control Package
The Control Microsystems FlowStation 110 is a complete pump station controller for pump-up and pump-down applications. With its built-in web server and user-friendly configuration interface, FlowStation 110 can be set up locally by field technicians or remotely by system engineers, and as such is ideal for stand-alone installations or as part of a greater SCADA network. The FlowStation 110 components consist of a dedicated pump controller, a color touch-screen local operator interface (Vision 221), and a GPRS modem for remote web browser, SMS, and email alarming, or a serial or Ethernet radio for SCADA connectivity.

Contemporary Interface Options
An exciting feature that FlowStation 110 brings to the mix is the integrated BlackBerry interface (several models) for basic viewing and alarm acknowledgement. Local configuration and operation is handled via built-in web server and an Ethernet connection to a laptop computer or optional touch-screen interface. For larger water control systems, FlowStation 110 provides interface tools that exploit the product's integrated web server, Ethernet and GPRS capabilities, making the product accessible wherever the Internet or WAN/LAN is available.

Reduced Power Consumption
To efficiently manage power use and related costs, FlowStation 110 supports the monitoring, calibration, and alarming of pump current draw, as well as minimizing energy consumption during peak demand periods through the use of up to three alternate setpoint groups. In addition, digital float switch and analog tank level signals (level sensors not included) are used by FlowStation 110 to manage up to three pumps with a lead/lag/standby pumpswitching algorithm.

Custom Functionality
Integrators and pump panel manufacturers that serve the lift station market know that custom functionality is often required. FlowStation 110 provides the tools to extend its features beyond the out-of-the-box functions to support options such as: Modbus connection to motor protection relays, control of vent fans, backup generators, oxygen injection, and additional pump interlocks. These and other custom features can be implemented using optional TelePACE Ladder Logic or C++ programming. Now you can concentrate on adding your own value without having to worry about basic lift station functionality.

Enhanced Integration
FlowStation 110 facilitates integration within existing SCADA systems and includes pump station templates containing over 200 I/O points, all pre-configured and addressed for instant use with Control Microsystems' SCADA host software, ClearSCADA. New pump stations can be brought online easily and quickly by configuring just three parameters. Templates mimic the HTML configuration pages available in the controller and all operational set points (lead/lag/standby on/off, etc.) can be viewed and set from ClearSCADA.

Virtual Tour
Visit http://www.scadawise.com/fs/ for a Virtual Tour, or call Sage Designs at 1-888-ASK-SAGE for a demonstration, trial or more information.

OCTOBER SEMINARS
SCADAWise

Sage Designs is hosting two free SCADAWise seminars in October, one in Buena Park and one in San Ramon, CA. The seminars will feature Control Microsystems' FlowStation Pump Controller, Firetide's 900 MHz broadband wireless mesh networks, Specter Instruments WIN-911 Alarm Notification Software, and Teledesign Systems' licensed radios. Sign up for a seminar using the form inside or found on the Events page of our website.

WIN-911 now featuring SMS

In addition to Voice, Email and Paging notification, WIN-911 Version 7.09 now includes SMS 1-Way or SMS 2-Way text messaging. SMS 1-Way is featured with all WIN-911/Basic software installations. Using a standard cell phone, SMS Text alarm messaging can to be sent to all "on duty" users. SMS 2-Way is available with all WIN-911/PRO installations. Also included is the ability to acknowledge individual alarms and request alarm status reports. You also have access to other items such as health status and manual text messaging with the WIN-911 Alarm Monitor. WIN-911 SMS can be used with GSM or CDMA cell phone service providers such as AT&T and Verizon. The unlimted data/text plans for these wireless networks provides the user with a more reliable cost-effective way to send alarm notifications.

Introducing Mobile-911 for Windows Mobile 6 and Blackberry Smart phones.
The Mobile-911 application enhances the WIN-911/PRO Remote Notification Software featuring 2-way SMS. Mobile-911 is designed to allow users to view and organize alarms on a dedicated summary screen rather than deciphering the alarms randomly interspersed with other text messages on basic cell phone. It also offers the ability to easily acknowledge alarms, view status of any active alarm, monitor health of the system and send manual text messages to the WIN-911 Alarm Monitor.

Inside This Issue

Decreasing the Cost of SCADA

With the ever increasing demands of regulatory reporting and security, customers are required to invest in SCADA infrastructure to monitor critical water assets. However, many customers may harbor bad memories of SCADA from past experience. Twenty years ago, remote monitoring was expensive, black-box technology; controllers were not user friendly and only manufacturers had the ability to program their proprietary system. Communication through radios or leased lines was intermittent and prone to failure.

What does the SCADA picture look like today? Is it really any better? The answer is a resounding "yes" with today's SCADA technology being more affordable and much easier to use than its predecessors.

Discover how Control Microsystems' SCADA host platform, ClearSCADA, can help save money and increase productivity while reducing engineering burden, and management overhead.

The RTU advantage
The development of the Remote Telemetry Unit (RTU) is the first area where SCADA has improved. The growth of Programmable Logic Controllers (PLCs) into a multi-billion dollar market supporting the manufacturing industry paved the way to create the RTU, essentially a PLC modified to include more robust environmental specifications and integrated communications. RTUs now start at less than $1,000 and may include radio communication functionality at that price point.

The role of the SCADA host
The advance in SCADA host software that collects and displays data from the remote controllers was the next significant improvement. Depending on the needs of a specific SCADA system, the SCADA host may comprise multiple pieces of software to provide all the required functionality. A Polling Engine, or communications driver,

sequentially scans remote controllers using radio or other communication links. As the Polling Engine acquires data, it is copied to the SCADA Real-Time Database. Data in the Real-Time Database is formatted by the Graphic Display used to show the operators what is happening. Customers who wish to archive historical data and alarm events require additional Historian software and sharing data with management or remote
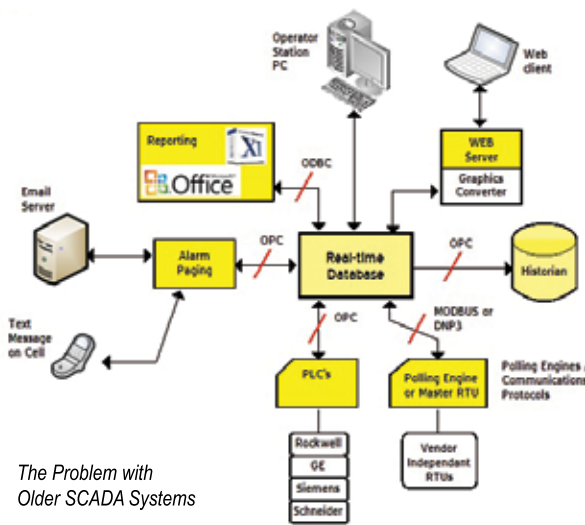
The Problem with Older SCADA Systems

users requires a Web Client module that allows users to connect to the SCADA host through a Web browser. Each additional piece of software adds software license fees and increasing annual maintenance costs, to say nothing of the engineering difficulty to build, configure, and maintain the system. Fortunately, some newer SCADA hosts include all the functionality mentioned before and simplify installation and maintenance.

The problem with older SCADA systems
Looking at the previous example of a non-

integrated SCADA system, red lines crossing a data connection between the Real-Time Database to another application indicate a tag or point that needs to be configured and maintained each time the system changes or expands. No wonder the engineering costs for SCADA are high – in environments like those pictured, it is possible for annual maintenance costs to outstrip the price of purchasing new software. If this resembles your SCADA system you may be better off replacing your existing system with a product that integrates all of the components to reduce software license fees, configuration overhead, and ongoing maintenance costs.

In situations where your network of remote monitoring stations is continually expanding, or remote monitoring sites must communicate back to an office or control centre, the proper SCADA solution can reduce costs and increase performance. For example, when deploying new remote sites you elect to use RTUs with integrated radios rather than a basic PLC. However, an upgrade to the entire radio system is required to support the additional volume of data generated by the new remote sites and prevent performance issues. When faced with this problem, you can choose to upgrade, or you can leverage the existing communication infrastructure by switching your SCADA to the more efficient DNP3 protocol.

The DNP3 solution
DNP3 is an open, industry-standard protocol developed 30 years ago for the power transmission market. Its key features include time-stamped data at the RTU and event-based communications. DNP3's use of event-based communication is what enables it to use communications more efficiently: only data that has changed since the last poll is sent to the SCADA host. By sending less data per polling cycle, less communication resources are consumed, allowing more sites to share an existing communication network. With DNP3, you can expand your system without taxing existing communication channels while guaranteeing that critical data is being reliably collected.

How integrated SCADA systems reduce operational costs
If you are a small or medium-sized organization, it is unlikely that you have a central control room with an operator

monitoring your SCADA system 24/7 for alarms. It is more likely that standby operators receive alerts from a call-out system when general alarms are triggered.

A SCADA host can simplify management of alarms and allow faster response to problems before they cause production losses. An integrated SCADA system has the provision to redirect critical alarms to any operator (or group of users) via pager, SMS, or email message automatically and provide details on the specific alarm to allow quick response. For example, a high-level probe in a lift station sends an alarm that a spill is eminent. The SCADA host forwards the alarm to an operator's cell phone through an SMS text message; upon receiving the alarm, the operator can respond immediately by sending a reply SMS text message to the SCADA host with instructions to shutdown the upstream pump, averting a spill and operational expense. This example can be further enhanced with escalation rules configured at the SCADA host that automatically alert a supervisor or management if an operator does not acknowledge and respond to an alarm within a preset time limit.

Integrated SCADA – the clear way forward
The evolution of SCADA systems from expensive, complex, closed systems to affordable, easy to use, open solutions mean that today's SCADA systems are simpler to deploy, configure, and manage. RTUs add increased functionality to remote monitoring locations without breaking the bank.

SCADA hosts offer a clear view of operational data collected by remote sensors while providing operational data logging and permitting timely response to alarm situations. Adoption of the DNP3 protocol allows engineers to maximize the lifespan of communication infrastructure by allowing more remote controllers to share existing communication channels. System monitoring and alarms are handled quickly and efficiently with integration into ubiquitous modes of modern communication like pagers, email, and text messages. These features, when combined into an integrated, modern SCADA system, help save money and increase productivity while reducing engineering burden, operator effort, and management overhead.

— by Eric Schwantler, Product Director - ClearSCADA, Control Microsystems.

Free SCADAWise™ Seminar

October 27, 2009
8AM – Noon
Holiday Inn Hotel & Conference Ctr.
7000 Beach Blvd.
Buena Park, CA 90620
Directions: http://www.hibuenapark.com/location-directions/index.cfm

October 28, 2009
8AM – Noon
Courtyard by Marriott San Ramon
18090 San Ramon Valley Blvd.
San Ramon, CA 94583
Directions: http://www.marriott.com/hotels/maps/travel/oakrm-courtyard-san-ramon/

Time	Session
8:00 – 8:15	**Continental Breakfast & Introductions**
8:15 - 9:00	**Wireless Mesh in Non-Line-of-Sight Applications: Technology Advancement in Smart Grid, and SCADA backhaul deployments** Jeff Butler, Western Region Systems Engineer for Firetide, will discuss the latest advances in Firetide's "Smart Adaptive" mesh technology in Smart Grid and Water / Waste Water deployments, encompassing both video surveillance and SCADA applications.
9:00 – 9:45	**WIN-911 2-way SMS and Mobile-911** Frank Grygier, Specter Instruments' VP of Sales, will discuss how WIN-911 Alarm Notification Software's new 2-way SMS and Mobile-911 can enhance your control system. The presentation will cover the configuration of WIN-911 using OPC as a live demonstration of Mobile-911 and 2-way SMS.
9:45 - 10:00	**Break**
10:00 – 10:45	**Out-of-the-Box Pump Controller** Jim Quist, Control Microsystems' Water/Wastewater Sales Manager will present the new FlowStation110 from Control Microsystems. The FlowStation is an out-of-the-box pump station controller which can be configured for the most demanding lift station or other pumping control applications. The FlowStation includes support for up to three pumps with a variety of alternation schemes and offers an option for a cellular connection supporting alarm notification and acknowledgement through a web interface or SMS text messaging.
10:45 – 11:30	**Multiport/Multi-Network Operation on Single Channel Radio Systems** Mark Hubbard, President of Teledesign Systems will discuss new digital techniques for supporting multiple SCADA data networks and/or different application protocols on an existing or new single channel radio network. The discussion will focus on enhanced radio modem packet data protocols that provide multiple levels of user packet classification and routing to create independent and isolated subnets for each application. Network design, packet protocol configuration, and allocation of subnet resources and throughput will be reviewed.
Time Permitting	**Creating Radio Diagnostics Templates in ClearSCADA** Tony Sannella, President of Sage Designs, will discuss the development process involved in creating a template in ClearSCADA for a radio diagnostics system with support for Trio UHF, Spread Spectrum serial and Spread Spectrum Ethernet radios.
11:45 - Noon	**Questions & Answers**

SAGE DESIGNS, INC.
SCADA & Security Products

Pre-registration Required

To Register: Call 1-888-275-7243 to reserve your seat. Then complete the information below and send to us via fax to 1-888-329-7243 or by email info@sagedesignsinc.com. A confirmation will be emailed to you. Hotel Directions can be found on the Events Page of our website: http://www.sagedesignsinc.com/events.

☐ **Register me for the free seminar in Buena Park on Tuesday, October 27, 2009**

☐ **Register me for the free seminar in San Ramon on Wednesday, October 28, 2009**

Name (*please print*):	Title:
Company:	Phone:
Address:	Fax:
	Email:
City/State/Zip:	Dietary Restrictions:

* * * Registration Deadline: October 20, 2009 * * *
There is no charge for this event, but we would appreciate notification if you must cancel your reservation.

SCADAWise™ Training Classes

ClearSCADA

SCADAPack

ClearSCADA Training Course

November 2-3-4-5, 2009 - Mill Valley, CA
February 22-25, 2009 - Buena Park, CA
May 2010 - Northern California

Day 1 (8AM– 4PM)	Installing ClearSCADA, Introduction to ClearSCADA, Components, Using ViewX, Using WebX, ClearSCADA Help
Day 2 (8AM - 4PM)	Configuring using ViewX, Database Organization, Basic Telemetry Configuration, Creating Mimics, Creating Trends
Day 3 (8AM - 4PM)	Configuring using ViewX, Templates & Instances, Logic Languages, Security, Communications Diagnostics
Day 4 (8AM - 4PM)	Reports, System Configuration, System Architecture, Questions

Cost: ClearSCADA Training Course $1,800

SCADAPack TelePACE Studio Training Course

October 19-20-21, 2009 - Mill Valley, CA
February 9-11, 2010 - Buena Park, CA
May 2010 - Northern California (TBA)

An optional SCADAPack 350, SCADAPack 334 or SCADAPack 32 is available at a special price* with the course—an excellent way to get started using Control Microsystems' Controllers.

Day 1 (8AM - 4PM)	SCADAPack controller operation, Series 5000 I/O, TelePACE Studio introduction
Day 2 (8AM - 4PM)	TelePACE Studio advanced programming techniques and advanced functions
Day 3 (8AM - 2PM)	Controller communications, Modbus Master/Slave protocol, Diagnostics, Modems

Cost: SCADAPack TelePACE Studio Course $1,275

     * Optional SCADAPack 350 Training Kit – adds $990
     * Optional SCADAPack 334 Training Kit – adds $990
     * Optional SCADAPack 32 Training Kit – adds $1,060

dnp3   DNP3 Protocol Training

November 16-17, 2009 - Corte Madera, CA
November 18-19, 2009 - Buena Park, CA

Suitable for implementation anywhere within a SCADA environment, learn how this flexible and efficient, non-proprietary layered protocol offers higher data-transfer integrity than most conventional communication protocols. This specialized 2-day session will cover:

- Master mode
- Slave mode
- Unsolicited Messages
- Object Classes
- Ethernet and Serial Communications

Cost: DNP3 Protocol Training $950
Register for this course.at: http://controlmicrosystems.com/resources-2/training-1/dnp3/

Instructors: ClearSCADA & SCADAPack TelePACE classes will be taught by Tony Sannellla, Sage Designs, a Control Microsystems' Factory-Certified Instructor. DNP3 classes will be taught by Naveen Dyal, Control Microsystems.

Location: See individual course registration form. Those requiring overnight accommodations should call the hotel directly for reservations.

What should I bring? Laptop computer with minimum of Win 2K or XP with 15mb free disk space, CD ROM, mouse with a scroll wheel, working serial port, and necessary permissions to install software on your computer.

What is provided? Lunch and coffee, soft drinks and snacks each day.

*Optional Training Kits at special course pricing (TelePACE class only): _Limit one (1) for every two (2) students per organization._ Training Kits will be shipped N/C to training facility, provided your registration is received approximately 4 weeks before the first day of the course, or shipped to you after the course when available. Training kits include a SCADAPack 350, SCADAPack 334 or SCADAPack 32 Controller, TelePACE Studio Software, Hardware Manual (on CD-ROM), I/O Simulator board, AC/2 Transformer, & programming cable. Prices do not include applicable California sales taxes.

- - - Download the Registration form at: http://www.sagedesignsinc.com/events/index.htm - - -

Please send me the Registration Form

SAGE DESIGNS, INC.
SCADA & Security Products

ClearSCADA:	❑ **November 2-5, 2009** ❑ **February 22-25, 2009** ❑ **May 2010 (TBA)**
SCADAPack TelePACE:	❑ **October 19-21, 2009** ❑ **February 9-11, 2009** ❑ **May 2010 (TBA)**
DNP3 Protocol Training:	❑ **November 16-17, 2009** ❑ **November 18-19, 2009**

Name (*please print*):	Title:
Company:	Phone:
Address:	Fax:
	Email:
City/State/Zip:	

* * * Registration Deadline: 3 weeks before 1st day of course * * *
All registrations are subject to cancellation fees. A confirmation notice will be sent to all registrants on or before the deadline date.

# Sacramento Area Sewer District Chooses DNP3

With the ever increasing need for reporting accurate data to state and other agencies, the Sacramento Area Sewer District (SASD) has replaced their existing SCADA system with one which will provide them with more detailed and accurate system information. The previous system using Modbus protocol proved to be less than adequate when it came to the collection of data, as it only reported instantaneous values when polled, and no history was retained when communications were interrupted. Partnering with Carollo Engineers in Walnut Creek, SASD set out to find a new SCADA system which would allow for accurate time-stamped data of all parameters collected from the 104 SASD pump stations.

After many months of searching and a lengthily selection process, FluidIQs of Napa California was selected as the integrator for the SASD's new SCADA system. Control Microsystems Inc. was selected to provide their ClearSCADA host system along with SCADAPack 357 controllers. This decision was made due to the tight integration of the DNP3 protocol into the Control Microsystems products. Since the DNP3-based system retains time-stamped data at the RTU on an event basis and returns all data to the host even when communications is lost for hours or even days, the District felt that this was the only way to meet the SASD's Division Chief's pledge to the Regional Board in 2005: "*We will not have loss of data in our new SCADA system.*"

DNP3 report-by-exception is used extensively by the new SASD SCADA system over a 3G cellular data network, resulting in updates to the SCADA system that are typically within 3 to 4 seconds. This enables system operators to literally see what's happening at all the District's 104 facilities in 'real time'.
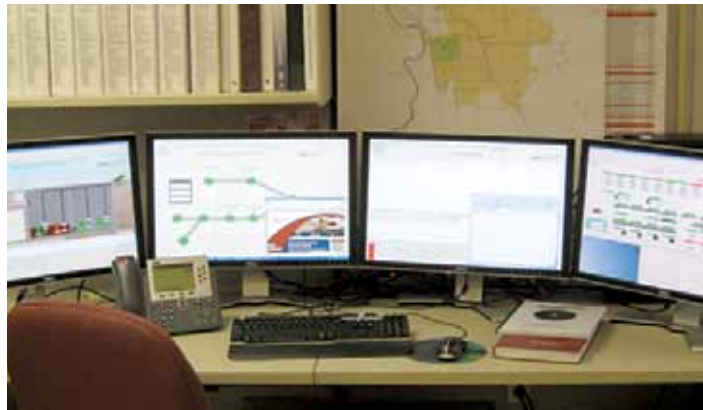
Using a ClearSCADA system with the multi-head display capability of the ViewX Operator station, SASD employees can see many aspects of their system at a glance.

The SASD SCADA System consists of redundant ClearSCADA servers, a performance/WebX server, DNS and a development server for offline development of strategies and displays. All servers and the remote SCADAPack controllers are time synchronized by a GPS Network Time Processor. An SQL server is also provided for parsing historical data for long term storage and retrieval on the districts MIS system. This data will be kept online for 10 years and used by the facilities engineering and flow modeling groups for future expansion planning. In case of a Sanitary Sewer Overflow (SSO), accurate pump run and flow data helps in reporting the volume of the SSO spill to the State Water Resources Control Board.

The County handled the implementation of their SCADA system with the support of FluidIQs of Napa, California who provided them with guidance in the programming of their SCADAPack PLCs and ClearSCADA SCADA host software, while County employees did the bulk of the integration and installation in-house. Phil Allen, Water Quality Control Systems Supervisor, and some of his staff attended classes in the programming of both TelePACE and ClearSCADA to better prepare for the implementation of the system. With the bulk of the project completed, Phil feels that the system has provided them with the latest in SCADA technology and will serve them well in the years to come. Phil stated, *"As with the integration of any system of this size and complexity, we have had our bumps in the road; however, the support we have received from Control Microsystems, FluidIQs and Sage Designs has ensured that we are happy with our new DNP3-based system."*

SASD's system consists of more than 100 SCADAPack 357 series controllers communicating over a system of cellular modems with a mix of leased line and radio links for back-up communications channel at critical sites.

TELEDESIGN SYSTEMS, INC.

Multi-Protocol Support Saves Costs for Monitoring Natural Gas Fields

Teledesign Systems' recent release of its Second Addressable Data Port firmware option for the TS4000 radio modem allows expansion of existing wireless networks to support two or more serial devices with one radio. This second port option, in conjunction with the TS4000's multi-group AirNet packet protocol, allows different, non-compatible SCADA protocols to co-exist on a single channel and not interfere with each other.

A typical application requiring single network support of different SCADA protocols is that required to monitor natural gas fields in central and northern Michigan. Presidium Energy, an oil and natural gas exploration and extraction company, monitors several hundred active wells in this region. Each well typically has one gas flow computer used to measure and record the volume of gas produced by the well. Larger well site installations have two or more flow computers interconnected via an RS-485 wired network. The flow computer communicates to a central master station via radio using the Modbus protocol.

In order to enhance the operational efficiency of the gas wells, additional monitoring and control equipment will be installed at most of the existing sites to control VFD drives and to automate the operation of secondary pumps and control values at the wells. The communication protocol support by the new equipment selected for the project is not compatible with the existing Modbus network supporting the flow computers, so a second independent radio network will be required to provide communications for the new protocol.

To directly support these new network requirements, the multi-protocol support provided by the TS4000 radio modem will be used to provide the existing Modbus network for the flow computers, and a separate DNP3 (or DF1) network for the new SCADA equipment (see Figure 1). The traffic loads estimated for each network will allow both to be support on a single VHF radio channel.

To mechanize the combined network, the TS4000's AirNet packet protocol will be set up to use different group addresses to isolate the two SCADA protocols. Each group address can be used to form an independent sub-network within the same radio system. The AirNet group address digitally encapsulates each SCADA protocol packet into a unique message format that is detected and used by all TS4000s in the network to route the SCADA packet to only those radio

Buena Vista Water Storage District Goes Digital
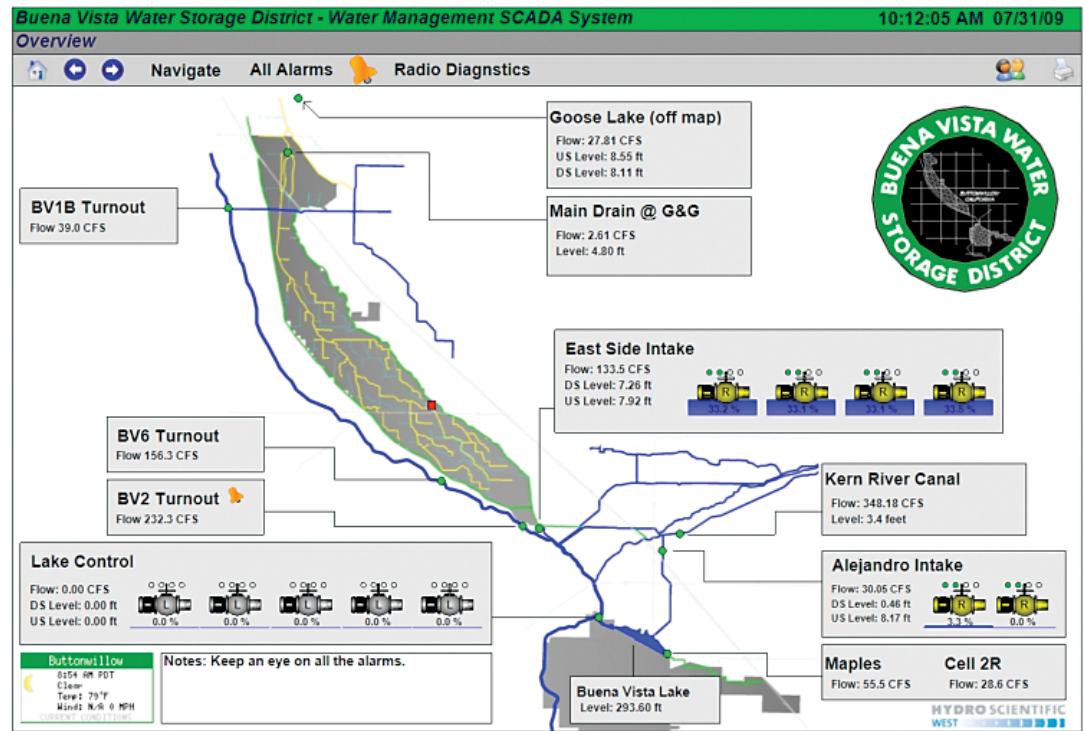
The Buena Vista Water Storage District (BVWSD) has completed the installation and commissioning of their first remote monitoring, control and automation system. BVWSD serves water to a gross area of approximately 49.000 acres and controls an average of 158,000 acre-feet of surface water per year via its 125 miles of canals and the Buena Vista Lakes. The project includes a Control Microsystems ClearSCADA server, SCADAPacks, Trio radios, flow and level instrumentation, and electronic gate actuators to control the flow and levels in the district's main canals and spills. With the real-time data and control, the water operators can now be alerted of flow and level conditions at 11 sites and instantly issue gate changes at three control sites. The systems integrator, HydroScientific West (HSW), based in Poway, CA, was chosen to build the system in time for use in the 2009 water season.

The uniqueness of every site required integration of several methods of instrumentation and control. Three control sites, each with two to five electronically controlled actuators, use SCADAPack 32 PLCs with IsaGRAF programming to monitor levels and flow, control the gates and automate gate commands to maintain flow. Actuators were configured for position, status and control, and were fitted with a unique top-of-stem linear potentiometer for redundant gate positioning.

While two of the control sites with existing flumes were fitted with redundant level sensors (pressure and ultrasonic) to monitor flow, all of the other flow sites use Acoustic Doppler Flow Meters with MODBUS Interface Modules that can interface directly with the communications system or be polled by a PLC if being used for control. Furthermore, flows at three California Aqueduct turnouts are monitored via an analog signal feed from State meters to SCADAPack LPs, which convert the feed to flow and accumulation to transmit back to the server.

A minor hurdle with this project was poorer than expected RF communications. Due to the location, geography and above-average noise levels in the area, a communications plan was developed to allow the use of Trio 900MHz spread spectrum radios. Two key features of the K-series radios made the network possible. First, the K-series radios can be bridged in chains, making several-hop connections possible. Second, dual RF ports allow upstream and downstream signals to use horizontally polarized directional antennas for higher gain for each link and greater noise rejection in other directions. With a new diagnostic driver in ClearSCADA, signal strength and other radio diagnostics can be monitored as points on the server.

The fully functioning system has quickly become a critical tool for the BVWSD operational staff to monitor and control the flow water in their district. Furthermore, custom accumulation reporting tools built into the server enable detailed reporting of water usage for any period of time. As a result, the district can respond quickly to changing conditions, ensuring the reliable delivery of water and reducing waste from their spills. Moving forward, HSW is in the process of using the BVWSD system to prototype a new web based system to allow viewing of real-time point values via a smart-phone or embedded in the district's web pages.

—Steve Borenstein, HydroScientific West

HYDRO SCIENTIFIC WEST

www.hydroscientificwest.com

900 MHz Non-line-of-sight Wireless Mesh for Utilities

Non-Line-of-Sight Performance

Users with non-line-of-sight locations can now deploy multi-hop, fully meshed networks and receive its benefits of redundancy and load balancing, thereby improving reliability of their networks. The new non-line-of-site mesh from California-based Firetide enables bandwidth-intensive applications, such as video surveillance and broadband access traffic, and extends mesh reliability, performance and services into these difficult environments. Firetide HotPort 6000-900 mesh nodes provide reliable Ethernet connectivity over a high performance, self-forming wireless mesh backbone, even in the most challenging of remote environments. HotPort 6000-900 mesh features a dual-radio solution with capability of operating in the 900 MHz spectrum on one radio, while concurrently operating in the 2.4 GHz, 4.9 GHz (U.S. public safety licensed band) or 5 GHz frequency ranges on the other.

'Smart Adaptive' Mesh Technology

HotPort 6000-900 mesh is uniquely designed for the noisy 900 MHz spectrum and introduces Firetide's 'Smart Adaptive' mesh technology to mitigate the effects of interference that typically brings down wireless throughput and reliability in this band. Firetide's noise-aware data path and noise filtering algorithms enable mesh to handle interference from other 900 MHz devices, as well as from adjacent frequency bands taken up by cellular and 3G traffic. Tools such as the spectrum analyzer, which is integrated into the product, allow a network administrator to remotely monitor the health of the network and take actions to further optimize the network performance.

Designed for Street-level Connectivity

Wireless mesh, especially in the 900 MHz spectrum, has emerged as a viable alternative to cellular and other types of communications for applications that require street-level connectivity where buildings and foliage often present a challenge. Wireless mesh is the best choice for critical applications, since it eliminates any single points of failure and provides multiple paths to ensure reliability and integrity of data. Non-line-of-sight Firetide mesh also meets the utilities' needs for reliable, high-bandwidth communications in remote and rugged terrains where it can increase the backhaul capacity of SCADA monitoring networks and also be used for security and surveillance.

EBMUD Selects SCADAPack for RTU Replacement Project

East Bay Municipal Utility District has awarded a 7-year contract to Sage Designs, Inc. to provide about 300 SCADAPack 350 and 357 controllers to replace their aging RTUs for their water distribution system. The contract includes a provision for training over 60 EBMUD personnel on TelePACE Studio programming plus supplemental training for DNP3 protocol. The RTUs will be deployed at a rate of about 50 units per year of the contract, providing a smooth transition to the new system.

One of the reasons that the SCADAPack controllers were selected is due its strong support for DNP3 protocol which EBMUD sees as a far superior choice than Modbus or other simple protocols. Additionally, interest in the data logging capabilities of the SCADAPack, which complement the DNP3 event logging, was a factor in their decision.

So far, EBMUD has installed only a couple of RTUs as part of a proof of concept, but have purchased over 50 SCADAPacks which will be programmed by their engineering staff and installed by their field technicians over the next few months. On-site training courses have provided instruction for more than 50 technicians and engineers to-date, while other personnel will attend either the remaining on-site courses or attend regularly scheduled Sage Designs Studio classes in the Bay Area.

Andes Tang, Supervisor of SCADA Engineering Section, East Bay Municipal Utility District, said, *"After extensive and comprehensive evaluation, our Operations, Maintenance, and Engineering staff selected SCADAPack as our standard RTU. Tony Sannella, from Sage Designs, has provided us with excellent services, professional technical support and training. His deliverables are always on time or ahead of schedule. He is very receptive to any of our concerns and very responsive and accommodating to our requests."*

## Teledesign's Multi-Protocol Support Saves Costs for Monitoring Natural Gas Fields *Continued from page 5*

modems that have data pots set up to receive the appropriate group addressed message.

Each data port on the TS4000 can be independently configured to send data on any group address, and receive data from just one group address, or from up to several group addresses. For the Presidium network, just two group addresses will be used, each one supporting a different SCADA protocol.

An additional requirement of the combined network is the need to create a data priority hierarchy between the two SCADA protocols. The natural gas flow measurements made by the flow computers are very critical to the day to day operations of the well field, and must have higher priority in the network than the supervisory communications used to control and monitor the SCADA functions performed by the newer equipment. To implement priority access into the network, the carrier sense multiple access (CSMA) access parameters supported within the AirNet protocol will be weighted to give priority to the Modbus communications over the DNP3/DF1 communications. As part of the TS4000's CSMA settings, each data port can be configured to use a different combination of access delays when attempting to transmit its data into the network. The access delay can be configured as a fixed value, a variable value, or a combination of both a fixed and variable values. These delay settings will be optimized to give the Modbus network

Figure 1
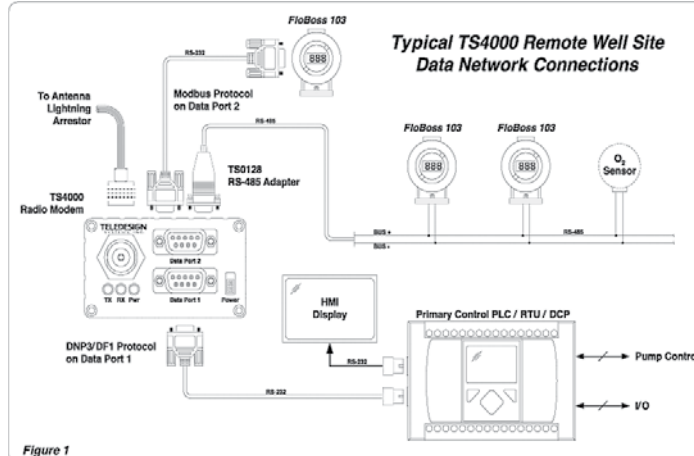
faster access to the radio channel so its data will be transferred first. The DNP3/DF1 data will be delay slightly and fill in on the channel while the Modbus data is being processed by the flow computer and central master station.

The five network repeater installations used to provide overlapping coverage of the well field will be configured to process and repeat the group addresses supporting the separate Modbus and DNP3/DF1 protocols. The AirNet parameters used to enable store and forward repeating at each repeater site can be selectively enabled or disabled to allow each repeater to relay transmissions for both subnets, or for just one of the two if required. For instance, if the wells in one geographical area will not require access to the DNP3/DF1 network, then the repeater providing coverage in that region will only relay the group address require for the Modbus network. Different network topologies can be support by the AirNet protocol where each repeater can be configured to selectively relay up to 60 different groups, or any combination of up to approximately 60,000 network nodes.

By utilizing the TS4000's configurable AirNet data port addressing options and CSMA channel access parameters, both SCADA protocol requirements will be combined onto one highly cost effective radio network. Presidium Energy will see a cost reduction of close to 50% in their radio and antenna equipment expenditures for the combined radio network.

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